

an optical integrator having a plurality of lens elements for forming a plurality of light source images, based on the beam from said light-source-image forming means, said lens elements having a rectangular cross section, two sides adjacent to each other of said rectangular cross section being different in length, said lens elements having a same refracting power both in the direction of the longer side of the rectangular cross section and in the direction of the shorter side thereof; and

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a relay optical system disposed between said light-source-image forming means and said optical integrator, for making a position of the light source images formed by said light-source-image forming means conjugate with a position of the light source images formed by said optical integrator.

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~~22~~. (New) An illumination optical apparatus comprising:

a light supply means for supplying a beam;

a light-source-image forming means for forming a plurality of light source images in a substantially linear arrangement, based on the beam from said light supply means;

an internal reflection type integrator having two reflection planes parallel to each other for forming a plurality of light source images, based on the beam from said light-source-image forming means, said internal reflection type integrator having a rectangular cross section, two sides adjacent to each other of said rectangular cross section being different in length; and

a relay optical system disposed between said light-source-image forming means and said internal reflection type integrator, for making a position of the light source images formed by said light-source-image forming means conjugate with a position of the light source images formed by said internal reflection type integrator.

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23. (New) A scanning exposure apparatus

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comprising:

a light supply means for supplying a beam;

a light-source-image forming means for forming a plurality of light source images in a substantially linear arrangement, based on the beam from said light supply means;

an optical integrator having a plurality of lens elements for forming a plurality of light source images, based on the beam from said light-source-image forming means, said lens elements having a rectangular cross section, two sides adjacent to each other of said rectangular cross section being different in length, said lens elements having a same refracting power both in the direction of the longer side of the rectangular cross section and in the direction of the shorter side thereof;

a relay optical system disposed between said light-source-image forming means and said optical integrator, for making a position of the light source images formed by said light-source-image forming means conjugate with a position of the light source images formed by said optical integrator;

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a condenser optical system for condensing the beam from said optical integrator to illuminate a surface of a reticle;

a reticle stage for moving said reticle in a direction parallel to said surface of reticle;

a wafer stage for carrying a wafer on which integrated circuits are to be formed, and moving said wafer in a direction parallel to a surface of said wafer; and

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a projection optical system disposed between said reticle and said wafer, for making a position at which said reticle is located conjugate with a position at which said wafer is located.

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24. (New) A scanning exposure apparatus

comprising:

a light supply means for supplying a beam;

a light-source-image forming means for forming a plurality of light source images in a substantially linear arrangement, based on the beam from said light supply means;

an internal reflection type integrator having two reflection planes parallel to each other for forming a plurality of light source images, based on the beam from said light-source-image forming means, said internal reflection type integrator having a rectangular cross section, two sides adjacent to each other of said rectangular cross section being different in length;

a relay optical system disposed between said light-source-image forming means and said internal reflection type integrator, for making a position of the light source images

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said lens elements arranged and in the direction perpendicular to the direction in which said lens elements arranged.

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27. (New) An illumination optical apparatus according to claim 25, wherein the ratio of height to width of said optical integrator of said light-source-image forming means along a plane perpendicular to an optical axis of said apparatus is the same as the ratio of longitudinal and transverse length of each lens element of said optical integrator for forming light source images based on the beam from said light-source-image forming means.

28. (New) A scanning exposure apparatus according to claim 23, wherein said reticle stage moves said reticle in a direction perpendicular to an optical axis of said apparatus and along a short side of a rectangular configuration of each lens element of said optical integrator, and said wafer stage moves said wafer in a direction perpendicular to an optical axis of said apparatus and along a short side of a rectangular sectional configuration of each lens element of said optical integrator.

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29. (New) A scanning exposure apparatus according to claim 23, wherein said light-source-image forming means comprises an optical integrator having a plurality of lens elements arranged in at least one line.

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30. (New) A scanning exposure apparatus according to claim 28, wherein the ratio of height to width of said